

Green Diamond Resource Company, Del Norte and Humboldt Counties, California

Final Environmental Impact Statement

For Authorization for Incidental Take and Implementation
of a Multiple Species Aquatic Habitat Conservation Plan and
Candidate Conservation Agreement with Assurances



Volume 2b

October 2006

prepared by

CH2MHILL

Jointly Administered Federal and State Agencies: J

Letter - J1. Signatory -DOI Redwood National Park.

Response to Comment J1-1

See Master Response 3, AHCP/CCAA Section 1.4.1 and EIS Section 4.1.2 regarding cumulative effects, including the geographic scope of the analysis. In the AHCP/CCAA, see Section 5 (Assessment of Potential Impacts to covered species and Their Habitats that May Result in Take) and Section 7 (Assessment of the Conservation Strategy's Effectiveness in Fulfilling the Plan's Purposes, including Summary of Mitigation and Minimization of the Impacts of Taking, Including Cumulative Impacts in Section 7.4). Overall, the Services expect that the cumulative result of implementing the Operating Conservation Program in the Plan Area would be to protect and/or improve hydrology and water quality conditions for the covered species and their habitats in each of the 11 HPAs beyond current conditions and beyond levels that would be expected under the No Action Alternative.

Response to Comment J1-2

See Master Response 7.



United States Department of the Interior California Department of Parks and Recreation

Redwood National and State Parks
1111 Second Street
Crescent City, California 95531



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Nat'l Marine Fisheries SVC
Arcata, CA

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November 19, 2002

Mr. James Bond
National Marine Fisheries Service
1655 Heindon Road
Arcata, CA 95521

Dear Mr. Bond:

Attached are Redwood National and State Parks' (RNSP) comments on the Simpson Resource Company (Simpson) Aquatic Habitat Conservation Plan and Candidate Conservation Agreement with Assurances (Plan) and the associated Draft Environmental Impact Statement (DEIS), dated July 2002.

RNSP shares approximately 60 miles of boundary with Simpson who is the single largest adjacent landowner and who owns about 32 percent of the private lands upstream from the park. We are interested in the potential effects of the Plan's proposed actions on the parks' natural and cultural resources, particularly within the Redwood Creek basin. Our comments are based on nearly 25 years of conducting studies in the Redwood Creek basin and participating in the timber harvest review and rule making processes. Therefore, our general and specific comments tend to focus on the Redwood Creek portion of the Plan Area. The lack of comments on any particular topic is not intended to imply agreement.

RNSP and Simpson have cooperated and collaborated for several years toward achieving a shared goal of addressing the potential for accelerated and controllable erosion from Simpson logging roads. We believe their concerns and efforts are sincere and we commend them for their work. Our comments on the proposed Plan and Operating Conservation Program (Program) are not intended to diminish, in any way, our cooperative working relationship with Simpson.

However, we believe the Plan fails to propose an adequate strategy for protection of salmonid and other aquatic species or their habitats. The primary deficiencies of the Plan and DEIS include:

J1-1

- 1) Insufficient analysis of cumulative watershed impacts, particularly downstream of Simpson ownerships, related to sediment and altered hydrology from extensive road networks, and poor riparian conditions after years of riparian harvest;

J1-2

- 2) Default prescriptions that, in many cases, appear to offer less protective measures than the current California Forest Practice Rules, such as the conifer retention standards for Class I

Response to Comment J1-3

The selection of specific prescriptions, including whether to include prescriptions relating to buffer zones or limitations on road construction and, if so, what those prescriptions might entail, is a matter of the Permit applicant's discretion (HCP Handbook at 3-19). The Services' role in designing the conservation program is to "*be prepared to advise*" during the development of the Plan and to judge its consistency with the ESA approval criteria as a whole once the application is complete (HCP Handbook at 3-6 and 3-7). The ESA does not require that any particular measure be adopted or imposed, but only that its criteria for Permit issuance be met. Issuance criteria are discussed in EIS section 1.3, AHCP/CCAA Section 1.4.1 and Master Response 8. The Services believe that the Plan's Operating Conservation Program, including its provisions for RMZs and MWPZs, meets ESA Section 10(a) issuance criteria (see, e.g., response to Comment G6-42).

Response to Comment J1-4

AHCP/CCAA Section 6.2.3.2.3 provides a mechanism to adjust Green Diamond's financial commitment towards the acceleration period based on the five-year assessment described in AHCP/CCAA Section 6.2.3.2.2. In addition, at the end of the term of the Permits, all high and moderate risk sites within the Plan Area will be treated (AHCP/CCAA Section 6.2.3.2).

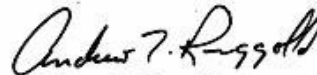
Response to Comment J1-5

Re-circulation of a draft EIS is appropriate when "there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its

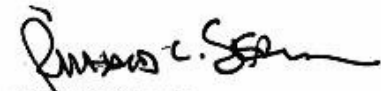
- J1-3 [3) riparian management zones (RMZs), Class II RMZ widths and road construction in mass wasting protection zones (MWPZs); and
- J1-4 [4) The road analysis underestimates the number of road miles and the cost to upgrade and decommission roads, thereby providing insufficient mitigation for the anticipated impacts to listed species.
- J1-5 [We consider the deficiencies in the Plan to be significant enough to warrant preparation of a revised Plan and DEIS with another public comment period.

Thank you for the opportunity to review these documents. If you have any questions or need additional information, please contact Greg Bundros at 707-825-5145 or Chris Heppe at 707-464-6101 x5440.

Sincerely,



Andrew T. Ringgold
National Park Superintendent



Richard C. Sermon
State Parks Superintendent

Attachment

impacts.” 40 C.F.R. section 1502.9(c)(1)(ii). A supplemental EIS is not necessary every time new information comes to light. *Marsh v. Oregon Natural Resources Council*, 490 US 360 (1989). Because the Services believe the cumulative effects analysis (see Master Response 3) is legally sufficient; recognize that the Plan supplements all existing applicable legal requirements, including those set forth in the CFPRs and do not excuse Green Diamond from compliance with any other applicable legal requirement (see AHCP/CCAA Section 1.4); respect the allocation of responsibility between Permit applicant and the Services for development of the operating conservation program (see HCP Handbook at 3-6 and 3-7); and believe that implementation of the Operating Conservation Program, as a whole, meets the ESA section 10(a) approval criteria. The Services do not believe that significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts have been identified. Therefore, we believe that recirculation is not warranted on the bases suggested.

Response to Comment J1-6

See Master Response 3, including the discussion therein regarding the geographic scope of the cumulative effects analysis. As discussed in AHCP/CCAA Section 7.4 (Summary of Mitigation and Minimization of the Impacts of Taking, Including Cumulative Impacts) and EIS Section 4.1.1 (Scope of Analysis), the geographical area for assessment of cumulative impacts is the 11 HPAs, which includes not only the Plan Area/Action Area, but also areas downstream from the Green Diamond ownership. The cumulative effects analyses presented throughout EIS Chapter 4 for the various resource categories have been provided within the context of the 11 HPAs.

Response to Comment J1-7

See Appendix E of the Plan for a general discussion of the data cited in the comment as examples of data not reported in the Plan. The relationship between the depletion of conifers in the riparian zone and the low levels of in-channel LWD and the relationship between stream canopy closure and water temperature were fundamental assumptions and an integral part of the development of the conservation strategy.

Response to Comment J1-8

Regulations governing ITP applications that are submitted for NMFS' approval require submittal of an HCP to be based on the best scientific and commercial data. NMFS believes that Green Diamond's Plan meets these requirements.

GENERAL COMMENTS

J1-6 1. Cumulative Watershed Effects Analysis: The DEIS and Plan do not analyze the effects of current and proposed actions on currently degraded aquatic resources, particularly downstream of Simpson ownership boundaries. The DEIS appropriately states that, "... the area to use in defining the cumulative impacts geographical boundary should extend to the point at which the resource is no longer affected significantly (CEQ, 1997)" (DEIS Section 4.1.1 Scope of Analysis). For an aquatic conservation plan, we believe a geographic feature is a more appropriate limit of affected resources rather than an arbitrary ownership boundary. For example, in Redwood Creek, data clearly demonstrate that the entire watershed, from headwaters to estuary has been impacted by sediment derived from landuse-induced landslides, streambank erosion, and road failures in the mainstem and tributaries. However, the DEIS focuses the physical scope of the analysis on the Primary Assessment Area (PAA) which includes the commercial timberlands within those portions of the 11 HPAS where Simpson operates or could operate in the future. By not extending the boundary downstream of Simpson's ownership, such as Redwood Creek's lower mainstem and estuary, it is impossible to adequately assess the environmental significance of the proposed actions.

J1-7 Moreover, the Plan does not accurately acknowledge the presently impaired resource conditions nor assess the impacts of past and present management actions on these conditions. For example, in the aquatic habitat assessment for the Redwood Creek HPA (Section 4 of the Plan), there is no mention of the relationship between the depletion of conifers from the riparian zones and the low levels of inchannel large woody debris (LWD), particularly in the mainstem of Redwood Creek. Discussions refer to high stream water temperature in the mainstem, but fail to point out the lack of effective stream canopy. When important habitat elements and management related watershed attributes are not properly acknowledged and analyzed, then the level of protection offered by the proposed prescriptions is likely insufficient to allow for the recovery of the aquatic ecosystem.

J1-8 2. Lack of Supporting Information: The Plan and DEIS lack supporting data, assessments and discussions that would clearly justify the proposed initial default prescriptions for Riparian Management Zones (RMZs), Riparian Slope Stability Management Zones (RSMZs), Stability Management Zones (SMZs) and more. For example, neither the Plan nor the DEIS acknowledges the North Coast Watershed Assessment Program (NCWAP) reference their preliminary findings reported in the 2001 Draft Redwood Creek Synthesis Report. The Plan and DEIS do not utilize long-term channel stability studies conducted by the RNSP and USGS, which document sediment movement in the lower reaches of Redwood Creek. Such information is critical to analyzing the relationship between past and present management actions and impacts on watershed and aquatic resources. It is therefore difficult to assess the adequacy of the proposed prescriptions when fundamental data, information and analyses are not considered. The initial default prescriptions should reflect a conservative approach until such time that Simpson can demonstrate, through peer reviewed studies, that less conservative measures would be effective.

J1-9 3. Relationship to other State and Federal authorities: The Plan and DEIS do not clearly discuss the relationship or consistency with other state and federal authorities that govern timber

NEPA (42 USCA Section 4371 et seq.; 40 CFR Parts 1500-15081) requires the Services and other agencies of the Federal government to use information “of high quality.” 40 CFR Section 1500.1(b). More specifically, NEPA requires the Services to “insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements.... [to] identify any methodologies used and... make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement.” 40 CFR Section 1502.24. The Services believe we have used high quality, accurate scientific information throughout the EIS.

Response to Comment J1-9

AHCP/CCAA Section 1.4 (Context) and EIS Section 1.5 (Regulatory Background) note that timber harvest-related activities on private lands are subject to numerous Federal and State regulations and other applicable guidelines. Key relevant State regulations and guidelines applicable to management activities on Green Diamond’s lands in northern California, and those associated with issuance of an ITP and ESP by the Services, have been described in those Sections. Plan approval and issuance of the Permits would supplement this existing regulatory regime. In other words, Plan approval and issuance of the Permits under the ESA would not excuse Green Diamond from any obligation to comply with otherwise applicable laws--Green Diamond would continue to be subject to regulatory requirements with or without the Permits. Further, issuance of the Permits under the ESA does not affect other agencies’ jurisdiction under Federal or State law. Federal and State agencies would continue to govern activities in the Plan Area following issuance of the Permits just as they would if no permits were issued, and would participate in the THP process just as they would if no permits were issued. For these reasons, a measure-for-measure comparison with the CFPRs (which have been discussed in Master Response 7) is not necessary--following issuance of the Permits, Green Diamond would be obligated to comply with both the CFPRs and the prescriptions included in the Plan.

Response to Comment J1-10

The commenter is correct in pointing out the 16.7 % “blow up factor” used in the Plan and EIS to account for the difference between Green Diamond’s GIS road miles and the actual road mileage, may not be accurate. Detailed road inventories have not been completed for the Plan Area. Therefore an average from the completed road inventories was utilized. As described in AHCP/CCAA Section 6.2.3.2.2, the estimate will be refined with additional inventory information at the end of the first five years of the Permits.

The average cost provided in the comment may well be the upper end of the average decommissioning cost of the larger “footprint” roads that the commenter may be familiar with or has treated to date. However the larger “footprint” roads described in the comment are not representative of most of the road network in the Plan Area. The average cost per mile provided in Table F2-10 of the Plan reflects the expected average cost for all the roads in the Plan Area, not just the large “footprint” roads.

Response to Comment J1-11

See Master Response 17 regarding road density, and Master Response 14 regarding accountability and Plan enforceability.

Response to Comment J1-12

See Master Response 17

management and resource protection. Although the DEIS provides a general description of state and federal regulatory processes, it is not clear how these regulations will be implemented and enforced in the context of a federally approved Incidental Take Permit (ITP). In particular, the Plan and DEIS should contain tables that compare various aspects of the Plan with the current California Forest Practice Rules (FPRs). Without this comparison, we found it difficult to evaluate the level of protection offered by the Plan when compared to existing regulatory processes. Moreover, it was not clear how state resource agency representatives would be involved or responsible for ensuring that HCP provisions are implemented through the timber harvest plan (THP) review process. Given the 50-year duration of the Plan, the Plan should clearly describe the relationship of the proposed action to compliance with other applicable authorities including the FPRs, Water Quality Basin Plan, Total Maximum Daily Loads, California Fish and Game Codes, etc.

4. Incorrect Road Analysis: The analysis for road treatments in Appendix F appears incorrect. It uses 16.7% as a “blow up factor” (multiplier) to account for roads not captured in Simpson’s GIS road coverage. RNSP’s GIS road coverage shows 358 miles of roads on Simpson property in Redwood Creek versus the 249 reported in Table 5-15. This represents a difference of 44% between what we believe are accurate data and the “blow up factor”. Further, we believe the treatment costs applied to the analysis are low. From Table F2-10 (pg. F-56) the average cost for road treatments, including both upgrade and decommissions, is \$25,000 per mile. In contrast, documented decommissioning costs for large roads on private lands in Redwood Creek are about \$86,000 per mile, based on completed and proposed projects covering nearly 17 miles of large haul roads. These costs likely reflect the upper end of average decommissioning costs due to the larger “footprint” of legacy roads typical in the redwood ‘zone’. Road upgrading costs in the redwood zone average about \$72,000 per mile. These differences in costs suggest that the cost analyses for road treatments, including treatment rates, are significantly underestimated. The plan should provide greater detail concerning the source of the cost estimates rather than just stating that the costs are from PWA. Given the apparent discrepancies discussed above, we believe treatment rates should be re-evaluated across the plan area.

5. Unit of Measure for the Road Implementation Plan: The “accelerated” implementation plan is based on an intangible unit of measure. Rather than using a fixed-dollar amount for both annual and life-of-Plan costs, the Program should use road density as the unit of measure. Dollar amounts have little or no significance to aquatic resources, and who would ensure accountability? In contrast, road density is a tangible and measurable metric that has significant implications to water quality and aquatic habitat health.

6. Reduce Road Density by Decommissioning Roads: The Program should commit to reducing road density in the Plan Area by decommissioning roads. Road density for Simpson lands in Redwood Creek is nearly 7.0 miles per square mile, nearly equal to the drainage density in Redwood Creek at the 1:24,000 scale. Upgrading roads will reduce the risk of failure at specific points, but does not eliminate the risk of failure. For example, although the risk is reduced after upgrading, a 600 cubic yard culverted stream crossing still has the potential to deliver about 600 cubic yards of sediment to a stream. Granted, the risk is less, but it still exists and so do the hydrologic effects of the road. Therefore, roads must be

Response to Comment J1-13

The Plan uses a consistent set of criteria, including biological, geomorphic and road-related management criteria, to prioritize all of the road work units (RWUs), including those within the Redwood Creek HPA. Similarly, the prioritization table for the 30 RWUs within the Lower Klamath Basin (Table 6-12 in AHCP/CCAA Section 6.3.3.2.3) used the prioritization criteria previously developed by the Lower Klamath Restoration Partnership, which were adopted from the "Watershed Restoration and Enhancement Plan" developed by the Lower Klamath Restoration Partnership. These criteria are presently in use.

For the other 28 RWUs, and for consistency purposes, the Plan includes management criteria in an attempt to prioritize the RWUs in an equitable manner for those RWUs outside the Lower Klamath River region. The approach reduced subjectivity in the ranking process. Furthermore, using other more subjective criteria (e.g., widely ranging stakeholder developed criteria) would have likely complicated and prolonged the process of prioritization. Since the Plan covers six cold water adapted species (see AHCP/CCAA Section 1.3.3), the Plan used ranking criteria based on and protective of those species.

Response to Comment J1-14

The road inventory data the commenter is referring to is currently being utilized. The completed information from the road inventory within Redwood Creek at the time the sediment production and delivery analysis was performed is included in the AHCP/CCAA (Appendix F2). The rest of the inventory data will be included in the five year assessment of future sediment yield (see

decommissioned to truly minimize sediment threats and to restore hydrologic function. Accordingly, we recommend a third target in Section 6.1.2.2.4 Sediment Objective that reads as follows: 3. "Decommission roads to achieve a maximum road density of less than 6 (or other responsible value) miles per square mile in any RWU and less than 5 (or other responsible value) miles/square mile in any subwatershed within an RWU within the first 15 years, and less than 4 (or other responsible value) miles per square mile in all RWUs over the life of the Plan."

7. Prioritization of Road Work Units - Other Restoration Efforts: The criteria used to prioritize sub-watershed Road Work Units (RWUs) are generally good, and the weighting method of slope classes is valid. However, a criterion that is missing from the method is the opportunity to augment other aquatic habitat restoration efforts within an RWU. This is of particular importance in Redwood Creek where RNSP occupies the lower one-third of the Redwood Creek basin. Accounting for the National Park presence in the lower-third of the watershed would not only document Simpson's commitment to the protection of this public trust resource, but it would seize the opportunity to effect watershed restoration efforts at the basin scale. The park has reduced road density on parklands in Redwood Creek to about 1.1 miles per square mile, and will soon reduce it to less than 0.7 miles per square mile. Parkland tributaries will eventually provide properly functioning aquatic habitat in the lower third of the basin. Thus, the aquatic resources in Redwood Creek would benefit significantly from the combined effects of aggressive road treatment programs in lower Redwood Creek on parklands, and upper Redwood Creek on Simpson lands which represent about 32% of the private lands upstream of the park. No where on Simpson lands is there an equal opportunity to augment private-land erosion control/prevention efforts with public-land watershed restoration efforts at the basin scale.

8. Prioritization of Road Work Units - Completed Road Inventories: Road inventories have recently been completed on Simpson lands in Redwood Creek. The roads were inventoried between summer 1999 and early 2002, at a cost of about \$340,000 in public funds (SB 271 Grants and National Park Service grant matching funds). The data are current and valid at this point in time, but will eventually become outdated as large storms occur, roads fail and/or are upgraded, or as other conditions change. Making the most of the public investment already placed into these roads should be of paramount importance, and should be a criterion for the prioritization of sub-watershed RWUs.

9. Enforceability of the Plan: The enforceability of the Plan will be determined by the clarity and specificity of the measures contained within the Operating Conservation Program (Program) as detailed in Section 6.2. The Program represents Simpson's binding and enforceable commitments to satisfy the requirements of ESA Section 10(a). As presently written, the Program is unenforceable and incomplete. The use of words such as "where feasible, when possible," etc. diminishes enforceability. Important details and/or statements of intent found in Section 6.3 and some of the appendices are not repeated in Section 6.2, rendering it incomplete. Section 6.2 should be rewritten to address these concerns. It seems possible to combine 6.2 and 6.3 into one comprehensive section that clearly articulates prescriptions and intent. This is the backbone of the Plan and, as written, it is unenforceable.

AHCP/CCAA Section 6.2.3.2.2), along with other completed inventories from other watersheds.

Green Diamond is currently involved with implementation projects within Redwood Creek that are utilizing the road inventory information. As future THPs are laid out in Redwood Creek under the Plan, the road assessment information would be utilized to treat high and moderate sites on roads appurtenant to those THPs.

As discussed previously (see response to Comment J1-13), the prioritization and ranking criteria used in the Plan were derived based on biological and management considerations.

Response to Comment J1-15

Plan enforceability has been discussed in Master Response 14.

AHCP/CCAA Section 6.2 and Section 6.3 serve different purposes. AHCP/CCAA Section 6.2 sets forth the specific conservation measures that Green Diamond will undertake within the Plan Area during the term of the Permits. These measures to minimize and mitigate the impacts of incidental take, maintain and improve habitat conditions for the covered species, monitor implementation and effectiveness of the Plan, institute adaptive management, and respond to changed and unforeseen circumstances are enforceable. AHCP/CCAA Section 6.3 supplements Section 6.2 with additional information regarding the intent and rationale that underlie the specific measures and commitments outlined in Section 6.2 and will help to interpret the specific elements of the Operating Conservation Program.

Response to Comment J1-16

The adaptive management reserve account, including how it is funded, its opening balance and how it may change, and how it would be used under the Plan to benefit the covered species and their habitats, is discussed in AHCP/CCAA Sections 6.2.6.3 and 6.3.6.2, as well as in Master Response 15. Adaptive management is a tool to address uncertainty in an HCP, and the Services believe that, the adaptive management program is the best mechanism to address any uncertainty in this Plan. The Services have found that the AMRA is adequate for the purposes provided in the Plan.

The Services' will be active in the review of the Plan and its enforcement. However, the provisions of the AMRA are designed to be relatively self-implementing and not require significant ongoing discretionary review. The Services believe that the process set forth in IA paragraph 13.6 will efficiently and effectively resolve disputes. The program does encourage dispute resolution at the lowest possible level but also acknowledges the rights of the parties to raise issues to higher levels if necessary, striking a proper balance. See also response to Comment J1-79.

Response to Comment J1-17

See Master Response 4.

Response to Comment J1-18

See Master Response 13.

Response to Comment J1-19

See response to Comment S2-19. The Plan does not propose a one-size-fits-all slope stability approach. Criteria for the SSS

J1-15

Enforceable language is needed to ensure compliance and company commitment to stated goals and prescribed practices.

J1-16

10. Adaptive Management: The Plan, potentially, would guide forest management on more than 470,000 acres yet provides an opening Adaptive Management Reserve Account (AMRA) balance of only 1,500 fully stocked acres (0.3 percent of the Plan Area plus Additions). The opening AMRA is based on a limited and/or incomplete knowledge of the Plan Area. The Effectiveness Monitoring Programs will not produce meaningful results for many years, and adaptive management changes would occur only if there is a sufficient balance in the AMRA to make the change. The Services' participation in the review of monitoring and analysis methods and prescription development appears extremely limited (if not precluded), and the Implementation Agreement presents a dispute resolution process that does not ensure resolution at the local level. As presented, the resolution process would require court actions, which neither Service member is likely to pursue. These issues represent a plan that is focussed more on limiting liability from monitoring results rather than a plan that is strongly committed to adaptive management.

J1-17

11. Herbicide Use: Herbicide use is a related timber management activity with the potential to affect aquatic species and associated habitat in the Plan Area. Even though Simpson is not seeking ESA coverage for herbicide use, we believe the application of herbicides should be incorporated into the cumulative impact analysis. Herbicide use is a past, present and reasonably foreseeable future action that may be individually minor but collectively significant over a period of time.

J1-18

12. Foresters Practicing Geology: Throughout discussions of roads and slope stability measures, the Program states that foresters (RPFs) can perform the functions normally delegated to a geologist. For example, the RPF can evaluate and adjust boundaries to landslide processes, and determine the appropriateness of road construction through RSMZs. While it is noted that RPFs will receive training in slope stability issues, this gives the appearance of a distinct conflict of interest and abuse of their license authority. Foresters should practice forestry and geologists should practice geology. All reference to this indiscretion should be removed from all relevant sections of the Program.

J1-19

13. Steep Streamside Slopes: The Program's one-size-fits-all approach to slope stability is fundamentally flawed. The data used to support the initial default maximum slope widths is limited. The Riparian Slope Stability Management Zone (RSMZ) widths for Redwood Creek are short given the dramatic inner gorge along Redwood Creek and the larger tributary channels. Fixed-zone-widths can be reduced by alternative prescriptions, but the Program does not describe whether or not zones can be widened based on field review and site specific needs. Zone widths can be increased in the future based on results of studies, but the studies would not be completed for 15 years. The details of study design have not been finalized and, therefore, cannot be described, and study design is a closed process not subject to peer review. Further, the Program does not describe what triggers a geologic review from the California Geological Survey (CGS) or what weight their recommendations would carry. As written, the slope stability prescriptions would not provide the same level of protection available under current FPRs, as amended by the Threatened and Impaired Watershed Rules

conservation measures (AHCP/CCAA Section 6.2.2) varies by HPA Group and would be redefined for each HPA based on empirical data from the SSS Delineation Study during the first 7 years of the Plan (see AHCP/CCAA Section 6.2.5.3.2) and the SSS Assessment after 15 years of the Plan (AHCP/CCAA Section 6.2.5.3.3). Although the preliminary empirical data used to define SSS gradient and distance thresholds is limited, these criteria have adequate support in the information the Services considered. Significantly, they also may be adjusted after 7 years and then again after 15 years, depending on their overall effectiveness - not only after 15 years as asserted in the comment. This period of time was necessary due to logistical reasons of collecting and analyzing data across the size of the Plan Area. Also, the conservation measures for the other mass wasting prescription zones (MWPZs) and existing landslides are sensitive to variable geologic conditions in so much as the development of those landscape features is a function of geologic conditions.

A registered geologist can work with the registered professional forester to prepare a more cost-effective site specific alternative to the default prescription (AHCP/CCAA Section 6.2.2.6). Zones can be widened to the extent that they are required to comply with other laws and regulations, or to the extent is more cost effective than the default prescription under the Plan.

A discussion of the relative effects of silvicultural management on slope stability and long term sediment delivery under existing conditions and under the Plan is provided in AHCP/CCAA Appendix F1. This discussion is based on a combination of professional judgment, mapping (by a California Registered Geologist) of deep seated landslides, the increased cost-benefit ratio and diminishing returns of more restrictive SSS conservation measures, and information presented in professional literature. The slope stability-silviculture-sediment delivery discussion in AHCP/CCAA Appendix F1 is carried forward in AHCP/CCAA Appendix F3 and extrapolated into a sediment model for the entire Plan Area. Based on Green Diamond's conservative approach to collecting the preliminary SSS data, the discussion of silvicultural effects on slope stability in AHCP/CCAA Appendix F1, and the reasonable schedule for updating the data set and adjusting the SSS gradient and distance

thresholds for each individual HPA, the Services believe that the default SSS prescriptions are adequately supported.

Geologic reviews of Green Diamond AHCP/CCAA-compliant THPs by California State agencies will be triggered at the discretion of CDF or as otherwise required by State law during the THP review process. Under the Plan, Green Diamond will continue to be required to comply with applicable laws and will be subject to determinations made by California State agencies.

See Master Response 16 regarding evaluation of the effectiveness of the conservation measures for steep streamside slopes.

Response to Comment J1-20

SHALSTAB is basically a model that utilizes slope and drainage mapping to identify areas of steep and convergent topography where landslides have a relatively high likelihood of occurrence. Landslide potential and actual landslide characteristics of any area, both inside and outside a SHALSTAB mapped zone, are a function of local geologic conditions that include many site specific factors, not merely slope and aspect.

SHALSTAB maps will be generated for the Plan Area and used to identify areas that must be field reviewed for headwall swale landforms for THP preparation (AHCP/CCAA Section 6.2.2.2.1). The SHALSTAB maps also will be used in conjunction with the mass wasting assessment at the discretion of the supervising geologist. For the purposes of Plan implementation, use of SHALSTAB maps along streamside slopes is neither proposed nor necessary. Instead, streamside slopes are addressed by proposed RMZ and SSS conservation measures. Insofar as RMZ or SSS conservation measures apply to all Class I and Class II watercourses, it follows that those conservation measures will address all streamside slopes along Class I and Class II watercourses, including landslide prone terrain. Additionally, where streamside slopes are steep, the Plan provides for HPA-specific SSS distances (initially as default HPA groups, but later by individual HPAs) to mitigate incrementally increased landslide-related sediment delivery hazards.

A likely first priority of all programmatic geologic work required by the Plan will be the SSS delineation studies for the 11 HPAs. GIS-generated slope maps in combination with aerial photograph review and Green Diamond's forestry and geology staff's first

(T&I Rules). Given that watersheds in the plan area are already sediment impaired, the Plan should provide greater assurances to the prevention of management-related landslides than the T&I Rules, at least until the Mass Wasting Assessment Studies have been completed. The T&I Rules will no longer apply when the Program is approved.

14. Limited Use of SHALSTAB: The Program limits the use of SHALSTAB and lacks an early comprehensive effort that identifies landslide-prone terrain in the Plan Area. The Program appropriately uses SHALSTAB to identify headwall swales that might be prone to landsliding. We acknowledge the model limitations caused by the quality of digital elevation models (DEMs), and that slope steepness can be underestimated along streams. However, based on our experience using the model in Redwood Creek, we believe it is capable of identifying more than just headwall swale features. Our use of the model during field reviews of proposed THPs suggests the model can also identify landslide-prone terrain on steep streamside slopes. Therefore, SHALSTAB should be used as a coarse filter tool to identify landslide-prone terrain in the Plan Area, and then field verified. This effort should be the first part of a Mass Wasting Assessment Program and completed in the early stages of the Plan.

15. Riparian Management Measures: The potential to meet multiple objectives of a healthy, functioning riparian stand (i.e., bank stability, LWD recruitment, cover, older seral habitat, etc.) is seriously compromised by the Program's RMZ approach consisting of the selective harvest of trees within inner and outer zones during the 50-year plan duration. Given the general lack of LWD throughout the Plan Area and other impaired aquatic conditions, a reasonable and simplified approach to achieving the multiple objectives of the RMZ is to restrict harvest completely in RMZs during the 50-year plan. Fifty years is still a relatively short timeframe for growing the structural components of a functional riparian redwood forest.

16. Special Treatment Areas (STAs): Redwood National and State Parks will continue to negotiate specific treatments for Special Treatment Areas adjacent to the park on a site-specific basis, to ensure protection of adjacent park resources.

17. Habitat Connectivity: Although the Plan focuses on aquatic species, the riparian management prescriptions will also affect key terrestrial species, such as fishers, red tree voles, flying squirrels, and Humboldt martens. These species require intact corridors of late seral stage habitat along drainage bottoms to provide connectivity and gene flow across the landscape. We recommend that the riparian management prescriptions retain a greater number of large conifers per acre to facilitate the development of late seral stand conditions. Given the current depleted riparian conditions in Redwood Creek, we believe that no harvest should occur from the inner zone of Class I and Class II streams until riparian corridors are fully stocked with large conifers. Alternatively, thinning from below could be used to encourage conifer growth until the riparian corridors are fully stocked with large conifers.

18. Yellow-light: There needs to be a greater level of accountability after a "yellow light" threshold has been discovered. Instead of assessing and resolving a "yellow light" issue

hand knowledge of the Plan Area are expected to be utilized to identify steep streamside slopes for evaluation by this study. SHALSTAB maps also may be consulted for this purpose.

Response to Comment J1-21

See Master Response 18. The Plan discusses the level of harvest that will occur in RMZs and the recruitment of wood into the watercourse (see AHCP/CCAA Section 6.2.2). The measures proposed are expected to insure the large size classes of LWD, which are necessary to be functional in large streams such as Redwood Creek, are produced and recruited.

Response to Comment J1-22

Comment noted.

Response to Comment J1-23

Green Diamond is not seeking incidental take coverage for any terrestrial species, including fishers, red tree voles, flying squirrels and Humboldt marten. Therefore, the conservation needs of these species have not been addressed in the Plan.

Response to Comment J1-24

The Plan does require Green Diamond to notify the Services within 30 days after analysis indicates that any yellow light threshold has been exceeded. As suggested in the comment and reflected in the Plan, Green Diamond will request technical assistance from the Services to determine the cause of the exceedance. The Plan also requires the concurrence of the Services before any management change can result from the triggering of the yellow light threshold. Furthermore, Green Diamond will document the procedures followed, conclusions reached and any changes in management undertaken to address a yellow light condition in a report to the Services (see AHCP/CCAA Section 6.2.6.1.1).

Response to Comment J1-25

Inconsistencies between definitions provided in the Plan and EIS glossaries have been eliminated. See AHCP/CCAA Section 10.2 and EIS Chapter 7. Thank you for bringing this to our attention.

Response to Comment J1-26

From a strict statistical sense, the BACI studies are essentially “case studies”. Studies such as these are designed to be representative of a set of conditions in the Plan Area. From the results obtained, inferences are made and can be extrapolated across a broader landscape. Based on enough case studies, valid conclusions can be reached, even though individually, such case studies would not pass the strict rigor for drawing statistical inferences. The rationale and utility of these experiments is provided as stated in AHCP/CCAA Section 4.3.1.2: “...if this pattern persists in additional monitored sites.... then certain conclusions could be drawn”. The Services believe that this is a reasonable and statistically-valid approach.

Response to Comment J1-27

It appears that the commenter misunderstood the statement in AHCP/CCAA Section 4.3.11 that: “it will likely to be necessary to monitor a site for more than 10 years to determine if a treatment effect has occurred.” This statement indicates how long Green Diamond would likely monitor a site - not when the first analysis would be conducted. As recommended by the commenter, the analysis would begin sooner (in as little as 2 years after treatment)

J1-24

strictly in-house, Simpson should report the situation to the appropriate Service for review and technical assistance. Corrective actions and measures should receive Service approval.

J1-25

19. Glossaries: There are two different glossaries, one in the Plan and one in the EIS. Definitions vary between the two and lead to confusion. For example, the definitions for single tree selection are different. Ensure that both glossaries agree, or simply provide one glossary for the entire document.

SPECIFIC COMMENTS on the PLAN (Organized by Section and page number)

J1-26

4.3.1.2 Class II BACI Study (pg 4-26): According to the Plan, “each site (in the BACI paired stream analysis) also will be analyzed separately so no statistical inference to other sites is possible.” The next paragraph discusses the preliminary results of four paired streams, which indicated two treatment streams were warmer and two were colder. The last sentence of the paragraph states, “If this pattern persists in additional monitored sites, one would conclude that the cumulative effect of timber harvest on water temperature in small Class II watercourses within a watershed should net to zero.” Given the very small sample size of 8 stream pairs, particularly if no statistical inference to other sites is possible, it seems inappropriate to make any such general conclusions about the cumulative effect of timber harvest on water temperature in small Class II watercourses within a watershed. The logic appears inconsistent. Please clarify.

J1-27

4.3.11.1 Tailed frogs (*Ascaphus truei*) and 4.3.11.2 - Southern Torrent Salamanders (*Rhyacotriton variegates*) (pg 4-37): Overall, members of the class Amphibia exhibit high annual variation throughout their life histories for items such as growth, reproductive output and survivorship (see Duellman & Trueb 1986, Petranks 1998). In addition, both the tailed frog and southern torrent salamander have relatively long aquatic larval periods of 2+ years (Brown 1990, Nussbaum & Tait 1977), while the southern torrent salamander has a low reproductive potential compared to other caudates of similar size (Nussbaum & Tait 1977). Both the tailed frog and southern torrent salamanders appear to be sensitive to timber harvests (Bury & Corn 1988, Corn & Bury 1989), and combined with their long larval periods, low reproductive output, and low dispersal potential a significant loss of individuals and or sub-populations could occur rapidly after treatment. Based on the best available data, we recommend that the time spent before the first analyses of the post-treatment (timber harvest) data are reduced from ten to five years. If, after five years of monitoring, there is no conclusive evidence to determine if a treatment effect has occurred, then proceed as originally proposed, with a second analysis conducted after ten years. We also recommend that a minimum of two and preferably three years of pre-disturbance monitoring be completed in order to construct a more accurate population baseline for monitored sites.

J1-28

4.4.5.3 Geology (pg 4-93, p2): The influence of past and present land use and road construction on slope stability is missing and needs to be addressed in the discussion of hillslope stability. In particular, the Plan should address the influence of road construction, harvest rates and silvicultural techniques on slope stability. Pitlick (1995) found that slides occurring in harvested areas were substantially larger and accounted for almost 80 percent of the total landslide related

but the monitoring would continue with periodic re-analysis for 10 years or more, even if no treatment effect is at first detected.

The Services also agree with the suggestion to increase the length of the pre-disturbance monitoring. Whenever possible, this would be done. However, it is often not possible to predict where harvest units will be laid out two to three years in advance. Therefore, the monitoring plan can not consistently prescribe a specific minimum pre-disturbance monitoring period.

Response to Comment J1-28

The Plan discusses the potential impacts of the covered activities on slope stability, including the effects of roads and timber harvesting, in Sections 5 and 6.3, as well as in Appendix F. Further, Appendix F of the Plan models the sedimentation effects of roads as well as harvesting in the past and projected future under the Plan. Based on the discussion in these referenced sections, the Services consider that the slope stability and road prescriptions (AHCP/CCAA Sections 6.2.2 and 6.2.3) were presented in the context of a discussion of the past and likely future effects of forest management under the Plan. See Master Response 11 regarding rates of harvest.

Response to Comment J1-29

Flood history and recurrence intervals are discussed in AHCP/CCAA Appendix E, because they are applicable to all HPAs.

Response to Comment J1-30

See response to Comment J1-7 and Appendix E of the Plan. The Services believe the suite of measures proposed in the Plan will address the limiting factors discussed in the comment and identified in the Plan. See also Response to J1-31.

Response to Comment J1-31

Water temperatures relative to the mainstem of Redwood Creek were not discussed in the Plan, because of the very small percentage of the Plan Area that is adjacent to the mainstem of Redwood Creek. The greatest potential for future impacts of the covered activities on water temperatures of Redwood Creek would be through sediment input from selected sub-basins within the Plan Area. For this reason, most of the water temperature data gathered for the Plan was from these tributaries to Redwood Creek and little water temperature data were collected for the mainstem.

The tributaries within the Plan Area of the Redwood Creek HPA were found to generally have suitable water temperatures for the covered species and, therefore, would contribute to providing local cool-water refugia for species such as coho salmon. The one exception was Coyote Creek, which has much of its drainage in Redwood National Park lands. Many of the tributaries from the Coyote Creek sub-basin in Redwood National Park flow through open prairies. Elevated water temperatures have been recorded

J1-28

erosion measured in tributary basins. The Oregon Department of Forestry (1997) has reached similar conclusions. Therefore, the Plan should clearly describe the history of timber harvest and road building, and justify the proposed hillslope and riparian stability prescriptions in the context of that discussion.

J1-29

4.4.5.4 Climate (pg 4-94): The description of Redwood Creek needs to include a discussion of flood history and recurrence intervals. Floods, coupled with intensive land management since the late 1940's, are a significant driver for geomorphic processes such as landslides in the watershed.

J1-30

4.4.5.6 Current Habitat Conditions (pg 4-95): The Plan needs to include a section on the mainstem stream channel conditions. Watershed products (sediment, LWD, and water quality) from tributary basins in the Redwood Creek HPA can contribute to existing cumulative watershed effects on Redwood Creek. Long-term channel stability studies by the RNSP and USGS have documented the movement of a large slug of sediment in the lower reaches of Redwood Creek. Recent studies show that while the mainstem system is recovering from past flood events, small to moderate floods can set back channel recovery, in particular, pool development and recovery.

J1-31

4.4.5.6.1 Water Temperature (pg 4-95): The stream temperature discussion fails to acknowledge that stream temperatures along the mainstem of Redwood Creek may also impair salmonid species, specifically coho. Simpson ownership encompasses portions of the main channel of Redwood Creek or borders one side of the mainstem. Management activities in riparian zones along tributaries and the mainstem can influence conditions along Redwood Creek. A map of the estimated historic range of coho in the Draft Redwood Creek Watershed Assessment (RNSP 1997) show coho presence upstream to Snow Camp Creek. However, there are no physical or gradient barriers on Redwood Creek until Snow Camp Creek; approximately 65 miles from the river mouth and more than 95 percent of the main channel of Redwood Creek is accessible to anadromous salmonids. The channel is recovering from past flood events and habitat conditions are improving. However, The absence of coho in the middle and upper basin of Redwood Creek is conspicuous.

Water temperature may be a limiting factor to salmonids for summer stream habitat conditions. A study by Welsh and others (2001) reports that Maximum Weekly Average Temperatures (MWAT) greater than 16.8 °C may preclude the presence of coho salmon in the Mattole River. Mattole salmon stocks are in the same Ecologically Significant Units as Redwood Creek salmonids and similar temperature thresholds may apply. Since 1997, MWATs for Redwood Creek monitoring sites are almost all above 17.7°C and as high as 22°C and indicate that the mainstem of Redwood Creek may not have suitable water temperatures to support juvenile coho salmon. Retention of canopy and reestablishment of large conifer dominant riparian zones, needs to be a priority in management of riparian zones in the HPA.

J1-32

4.4.5.6.1 Water Temperature (pg 4-95): We recommend Lake Prairie Creek be managed as a Class I stream based on restorable uses. As presented on page 4-95, the creek is currently defined as considered a Class II stream. However, prior to 1997 it was a Class I stream and provided habitat for both steelhead and resident rainbow trout. In 1981, Brown (1988) documented ½ mile of anadromy in the creek and juvenile steelhead were electroshocked in the lower section of

from one of these tributaries to Coyote Creek.

Response to Comment J1-32

Designation as a Class I or Class II stream, which would occur during the State THP process ultimately would determine the conservation measures that would be applied. Further, because the Plan Area does not include property along the mainstem of Lake Prairie Creek, the Plan would not govern activities there.

Response to Comment J1-33

The information provided in the comment has been incorporated into Table 4-8 of the Plan.

Response to Comment J1-34

As stated in AHCP/CCAA Section 5.5.2, for water temperatures less than lethal, the effect of elevated temperature on aquatic life tends to be cumulative. Therefore, short-term increases, as measured by the absolute maximum temperature, are less likely to be harmful than chronic, long-term increases as measured by the 7DMAVG temperature. Therefore, as described in the Plan, "red and yellow light" threshold criteria were developed to adequately monitor and provide protection to covered species on a long-term temperature basis.

As stated in AHCP/CCAA Section 3.3.1.3.1, to develop the temperature monitoring threshold values, 7DMAVG temperatures from monitoring studies conducted since 1994 were regressed on the square root of drainage area at stream locations known to support populations of the two covered amphibians and coho salmon species (the most temperature sensitive of the covered species). This regression relationship provided the basis of the "red and yellow light" temperature threshold criterion proposed for monitoring (AHCP/CCAA Section 6.2.5.5.1) and it provides for variability in watershed characteristics as discussed above and not on an absolute maximum temperature or a temperature threshold (e.g., acute lethal) value from the literature. Evidence in the Plan indicates that the existing water temperature conditions for the vast majority of the habitats within the Plan Area currently meet not only the acute short-term temperature needs for covered

the creek in both 1981 and again in 1996. A family living in the headwaters of Lake Prairie for the past 45 years, described a productive trout fishery along the entire upper reach of Lake Prairie Creek.

In 1997, a bridge failed in the headwaters of the stream during a storm and sent a debris torrent down Lake Prairie and into Redwood Creek, destroying aquatic and riparian habitat. The torrent deposited sediment in the lower section of the tributary creating a barrier at the mouth more than about 30-ft high. A field reconnaissance of Lake Prairie in the spring of 2001 by a California Department of Fish and Game biologist found no fish. As a result of the torrent, fish are no longer found in the stream and the anadromous section is buried in sediment.

Studies by Pitlick (1995) indicate that the residence time of sediment in steep tributaries is on the order of decades. As sediment is routed out of Lake Prairie and the creek cuts down through the deposit at the mouth, it will once again support steelhead populations if adequately protected.

4.4.5.8 Covered Species Occurrence and Status (pg 4-99, Table 4-8): The table should be updated to reflect salmonid presence/absence work conducted by Brown (Brown, 1988) and Anderson in 1980-81 (Anderson, 1988) and a more recent fisheries survey in 1994 (RNSP, 1995) (resampling of 1981 thesis sites) and a barrier survey in 1995 and 1996 by Anderson (RNSP, 1994). The work by Brown and Anderson did not document juvenile chinook, since fieldwork was conducted in mid- to late summer when juvenile chinook would not be present in the tributaries.

The following lists presence/absence of juvenile fish observed. The dates in the parenthesis indicate the year of observation:

Coyote Creek: coho (1981), steelhead (1980,1996)
 Panther Creek: steelhead (1980,1981,1994)
 Garrett Creek: steelhead (1980)
 Dolly Varden Creek: coho (1980), steelhead (1980)
 Beaver Creek: steelhead (1980)
 Toss-up Creek: steelhead ((1980, 1981, and 1994)
 Minor Creek: steelhead (1980)
 Lupton Creek: steelhead (1980)
 Noisy Creek: steelhead (1980)
 Cool Springs Creek: none (1980)
 Minon Creek: steelhead (1981, 1994)
 Lake Prairie Creek: steelhead (1980,1994)
 Panther/Bradford Creek: steelhead (1981)
 Pardee Creek: steelhead (1980)
 Twin Lakes Creek: steelhead (1980)
 Smokehouse Creek: steelhead (1980)
 Snow Camp Creek: steelhead (1980)

4.4.5.8.1 Chinook Salmon (Figure 4-22): Please explain how the 7DMAVG (7 day moving average), as a measure of water temperature, is related to fish growth, size of smolting, etc., not

species' survival, but also the chronic long-term temperature needs to ensure adequate growth, smoltification and reproduction for the covered species in the streams being monitored (see AHCP/CCAA Sections 3 and 4). This fact is evidenced by the presence of juveniles of covered species throughout the Plan Area.

Response to Comment J1-35

As noted in response to Comment J1-31, most of the Redwood Creek HPA tributaries located within the Plan Area that were monitored for water temperature contributed cool water to the mainstem of Redwood Creek. The one exception was Coyote Creek, which had a 7DMAVG of 17.1°C and 17.8°C in 1999 and 2000, respectively (see AHCP/CCAA Appendix page C-121). A full temperature profile of the Coyote Creek sub-basin was not conducted, but a Green Diamond biologist recorded a hand-held temperature of 22°C for a large unnamed tributary flowing through natural prairies in Redwood National Park. In contrast, the mainstem of Coyote Creek at that point was under 15°C. This observation led to the tentative conclusion that these prairie streams were likely the primary cause of somewhat elevated water temperatures that have been recorded in Coyote Creek. As noted by the commenter, the riparian vegetation along the mainstem of Coyote Creek has recovered and provides high canopy closure over the stream, so it seems unlikely that canopy reduction along the mainstem is contributing to these higher water temperatures.

Response to Comment J1-36

See response to Comment J1-7. Further, please note that the Plan Area does not include any land along the mainstem of Lake Prairie Creek.

Response to Comment J1-37

Although LWD surveys have not been done in these tributaries, most of the streams have been assessed as part of amphibian surveys. See AHCP/CCAA Section 4.3.11. Many of these streams

- J1-34 just death at lethal temperatures. The fish may not die due to high temperatures, but their chances of successful reproduction and long term survival may be severely limited.
- J1-35 4.4.5.9 Assessment Summary (pg 4-101, p1, s4): What are the temperature recordings from the Prairie Creek tributaries that indicate they are the warm water source for the mainstem Redwood Creek? Based on temperature recordings by RNSP in Coyote Creek (below), we are finding a cooling trend in Coyote Creek on parklands, possibly in response to recovering riparian vegetation. The highest water temperature recorded at mainstem of Coyote Creek was 22° C on 9/03/80. Subsequent water temperatures at the Coyote Creek mainstem during summer steelhead surveys (during the last week of July/first week August): 17° C (1994), 15° C (1995), 16° C (1996), 17.5° C (1997), 19° C (1998), 16.5° C (1999), 16.5° C (2000), 13° C (2001) and 15° C (2002).
- J1-36 4.4.5.9 Assessment Summary (pg 4-101, p1, s6): The Plan fails to point out that the 1997 debris torrent in Lake Prairie Creek not only severely impacted the riparian zone, but it also scoured the channel and deposited a thick wedge of sediment at the mouth. The torrent destroyed habitat and the deposit blocked steelhead access.
- J1-37 4.4.5.9. Assessment Summary (pg 4-101, p2, s5): We disagree with the statement that LWD in tributary streams is probably not an important habitat element. This statement is contrary to the findings in the NCWAP Draft Synthesis Report for Redwood Creek (2002) which describes the importance of LWD as a habitat element for Redwood Creek and its tributaries, and identified the lack of LWD in streams as a possible limiting factor for fish populations. We wonder how the assessment can make such a conclusion based on the fact that surveys of habitat elements in the Redwood Creek HPA have not been done.
- J1-38 4.4.5.9. Assessment Summary (pg 4-101, p3, s8): The Plan is deficient in discussing the impacts of debris flows on fish resources in tributary channels. Debris flows initiated in steep headwater streams can scour, bury and severely alter salmonid habitat and access of listed species in the lower sections of tributaries in the HPA and the mainstem of Redwood Creek. While impacts on amphibian species are highlighted, the plan fails to address impacts to fish habitat from these types of processes and how management activities alter and influence these processes.
- J1-39 4.4.5.9 Assessment Summary (pg 4-101, p4): We disagree with the top priority for the conservation strategy for the Redwood Creek HPA. Preventing sediment input from all road, not only legacy roads, should be a top priority. The debris flow in Lake Prairie Creek occurred from a current-day road. Top priorities should also include, the prevention of harvest and road related debris sliding from steep inner gorge slopes, and the recovery of riparian conditions that ensure adequate supplies of recruitable conifers, inchannel LWD and cool stream water temperatures. Based on stream temperature monitoring by RNSP, MWATs or (7DMAVG) for the main channel of Redwood Creek are typically above 17.8 °C. While Redwood Creek is currently listed as sediment impaired under the Clean Water Act Section 303(d), it is under consideration for temperature listing.
- J1-40 5.6.2 Potential for Direct Take from Use of Equipment (pg 5-21): The Plan describes direct effects, but does not discuss the indirect effects to listed salmonids. The Plan should include a

are high gradient, boulder and bedrock dominated channels. The pertinent literature suggests that LWD plays a lesser role in these channel types.

Response to Comment J1-38

See AHCP/CCAA Appendix E, which discusses the impact of harvest activities on different phenomenon, such as debris flows. The Services expect that implementation of the suite of conservation measures included in the Operating Conservation Program, as a whole, will minimize and mitigate impacts of take to the maximum extent practicable, including such as may relate to debris flows, and otherwise satisfy the ESA Section 10(a) Permit issuance criteria discussed in AHCP/CCAA Section 1.4.1 and Master Response 8.

Response to Comment J1-39

The Services agree that preventing input of sediment from newly constructed roads also is important and a priority. Numerous conservation measures were designed and included in the Plan to address this issue. See, for example, AHCP/CCAA Section 6.2.3.5. However, in a list of priorities, there can only be one top priority. Based on data in the Plan, the Services believe that threats from sediment input and the potential for debris flows are less from newly-constructed roads than from legacy roads.

Response to Comment J1-40

This discussion in AHCP/CCAA Section 5.6.2 provides an overview of the potential for take and as such was focused on the effects associated with implementation of the covered activities on the covered species. As the discussion in that section notes, activities (including equipment operation) could potentially result in “take” of the species. It is intuitive that if some activity would result in direct “take” of the species, that indirect take would occur from that same activity. For example, operation of a piece of equipment in the stream channel may result in the direct crushing of eggs in the gravel and, at the same time, may result in indirect effects by compacting the gravels, thereby making them less suitable for future spawning. AHCP/CCAA Section 5.6.2 only

summarizes the potential for impacts. The conservation measures provided in AHCP/CCAA Section 6.2.4 specifically address both direct and indirect effects of “take” from covered activities

Response to Comment J1-41

The modifier “mature” has been removed from the language of the Plan to clarify that the focus of the referenced biological objective is the age of the stand, not the qualitative concept of maturity. Under Green Diamond’s Option (a) document (see EIS Section 1.6.3.2), Green Diamond harvests trees in the 50-year age class. “Managed potential tree height” is based on the predicted height of dominant trees at 60 years of age (AHCP/CCAA Section 7.2.3.3.1). Managed potential tree height was computed for site indices 100 and 120, based on Wensel and Krumland’s (1986) site index system for young-growth redwood. Site indices 100 and 120 are representative of redwood productivity in the Plan Area, and the site index identifiers (e.g., 100 and 120) refer to the predicted height of dominant trees at a reference age of 50 years. Drainage area, a correlated surrogate for channel width, is taken into account in the long-term monitoring program for instream LWD. (See AHCP/CCAA Appendix C-2, especially Figure C2-3. The phrase: “managed potential tree height” has been defined in AHCP/CCAA Section 10.2 as follows:

“the height a dominant redwood tree would grow in 60 years (112 and 134 feet on site index 100 and 120 lands, respectively).”

Response to Comment J1-42

See response to Comment G6-21 for discussion and clarification of the objective (i.e., no impact on amphibian populations) and the conclusion about the impacts of timber harvest on amphibian populations.

The wording of AHCP/CCAA Section 6.1.2.2.3 #1 has been

J1-40

discussion of potential “harassment” effects such as equipment or people along fish bearing watercourses.

J1-41

6.1.2.2.2 LWD Objective (pg 6-5, p1): Please clarify the terms, “mature stands” and “managed potential tree height.” These terms are vague, not defined in the glossary and the objective is ambiguous. The word “conifer” should be used in the discussion if that is the intent. Also, please explain how the LWD objective would address the different LWD and recruitment needs of different size streams. The size of LWD needed for aquatic habitat, sediment storage and routing should vary based on the size and type of channel.

J1-42

6.1.2.2.3 Amphibian Population Objectives Section: The Plan states that sub-basin monitoring indicates that timber harvest activities have no measurable impact on amphibian populations. However, there is no mention about the potential effect of post-harvest activities on amphibians or aquatic resources. Post-harvest programs can include burning and herbicide use. The monitoring and adaptive management practices section should determine whether any changes to amphibian populations are due to harvest or post-harvest practices. The effects of post-harvest activities should be considered in setting population objectives.

J1-43

6.2.1 Riparian Management Measures (pg 6-7): This section lacks important intent language found in Section 6.3.1. For example, Section 6.3.1 (pg 6-64) states, “Class I watercourses include all current and historical fish-bearing watercourses.” It further states that classifications become “permanent” and the class can never be “downgraded,” but is silent about whether it would be possible to upgrade the class with new information. Please include the important intent discussions into this section so that measures are more enforceable.

J1-44

6.2.1 Riparian Management Measures (pg 6-7): The concept of restorable use is not mentioned in Section 6.2 or 6.3 and we believe this is a grave omission. Lake Prairie Creek serves as a good example of our concern. Studies performed in Redwood Creek documented steelhead within the lower half-mile of the stream. Anecdotal information from a family who has lived in the headwaters of Lake Prairie Creek for nearly 45 years described resident trout populations in the upper reaches of Lake Prairie Creek, evidently lost after the large floods. A 1997 debris torrent traveled nearly 2.5 miles from a failed road crossing to the confluence of Lake Prairie and Redwood Creek, creating a nearly 30-foot high log jam and temporary passage barrier. Discussions of water temperatures in Redwood Creek (pg 4-95) now refer to Lake Prairie Creek as a Class II stream. Please include a discussion that shows a commitment to restorable uses when classifying Class I and II streams, and change Lake Prairie Creek’s classification to a Class I stream, based on restorable uses.

J1-45

6.2.1 Riparian Management Measures (pg. 6-7): Riparian measures do not provide for Special Operation Zones (SOZs) currently found in the FPRs, as amended by the T&I Rules. Evenaged management will occur adjacent to Riparian Management Zones (RMZs) and we wonder why this added protective measure that would help prevent windthrow is not part of the management strategy. As written, the riparian measures in the Program fall short of current FPRs, as amended. Please explain and justify why SOZs are not needed.

revised as follows:

“Future monitoring ~~Results of paired sub-basins monitoring will~~ indicate that timber harvesting activities have no measurable impact...”

Post-harvest activities are discussed in AHCP/CCAA Section 2, regarding “covered activities.” Herbicide use is not a covered activity. See Master Response 4. The monitoring program (AHCP/CCAA Section 6.2.5) for covered amphibian species is expected to detect all impacts, including herbicide use or others that are part of the “treatment effect.”

Response to Comment J1-43

As discussed in Master Response 14, compliance with the Operating Conservation Program is enforceable. The Services believe that the existing intent language in Plan section 6.3 is sufficient to aid the Services’ in enforcement of the Operating Conservation Program measures, and do not agree that incorporating intent language in the Operating Conservation Program is necessary.

Response to Comment J1-44

“Class I watercourses” is defined in AHCP/CCAA Section 10.2 to include “historic fish-bearing watercourses.” This includes streams that have previously contained fish and have the potential for fish to be restored to them in the future. Based on the information provided in the comment, the example streams referred to would likely be considered “historical fish-bearing watercourses.

Response to Comment J1-45

The Operating Conservation Program supplements existing legal requirements imposed by other applicable authorities, including the CFPRs (AHCP/CCAA Section 1.4). Approval of the Plan and issuance of the Permits would not excuse Green Diamond from compliance with all other applicable laws, including those relating to Special Operation Zones (SOZs). The CFPRs have provisions for incorporating measures

from HCPs in THPs and those provisions will be followed here. As discussed in Master Response 8, the Services have found that the Plan meets the Permit approval criteria. A measure-by-measure comparison to the CFPRs is not necessary given that the applicant will not be excused from State law requirements that private timber harvesting operations may not occur except pursuant to required approvals of THPs or other similar documents.

Response to Comment J1-46

The Plan provides an additional layer of regulation that would supplement State timber harvesting regulations applicable in the THP process. The measures in the Operating Conservation Program (AHCP/CCAA Section 6.2) do not replace, but are in addition to, any CFPRs. As a result, riparian buffer widths (also known as watercourse and lake protection zones, or “WLPZs”) are often increased to address slope stability or other issues that are identified as part of development of a THP. The RMZs are identified in the Plan as a minimum width because, regardless of CFPRs, they cannot be less than 150 feet wide. However, they could also be wider as a result of State THP review process.

Response to Comment J1-47

See Master Response 18. Further, the commenter seems to have misunderstood AHCP/CCAA Section 6.2.1.1.1 -the inner zone width is not fixed for Class I streams, but rather is variable from 50-70 feet depending on slope.

Response to Comment J1-48

As stated in AHCP/CCAA Section 6.2.1.1, the RMZ would be extended to cover the entire floodplain and an additional 30 to 50 feet depending on the side slope. The application of SSS prescriptions would depend on the width of the floodplain, the HPA Group and the adjacent slope gradient of the floodplain as discussed in AHCP/CCAA Section 6.2.2. For example, a floodplain that extends 150 feet into the riparian zone and has adjacent side slopes greater 60 percent in the Humboldt Bay HPA Group SSS prescriptions will be applied. Specifically, the inner

- J1-46 **6.2.1.1 Class I RMZ Width (pg. 6-7, p1):** This section implies that RMZ widths can be wider than 150 feet by stating, “...at least 150 feet (slope distance) on each bank....” Please explain when and by what means the RMZ width can be increased, or if this is even possible.
- J1-47 **6.2.1.1.1 Inner Zone Width (pg. 6-7):** The fixed inner zone width would be insufficient in many cases. The inner zone width should be based on site conditions that consider slope steepness and stability, the riparian corridor health (stocking, presence/absence of conifers for recruitment) and the type and steepness of channel. Significant cumulative effects exist in the riparian corridor of Redwood Creek and tributary streams from past practices that either clearcut or significantly compromised riparian corridors, and the default prescriptions do not acknowledge these past practices or current conditions. NCWAP’s The Draft Synthesis Report for Redwood Creek states that the main channel of Redwood Creek lacks LWD, and recruitable conifers, of sufficient size and numbers, are limited. The report arrives at the same conclusion for sampled tributary channels. Further, Redwood Creek is a candidate for being listed as temperature impaired by the State Water Resources Control Board. RNSP temperature monitoring data record MWAT values greater than 19° C along the main channel. Please explain and justify the biological significance of the default inner zone widths in light of the above concerns.
- J1-48 **6.2.1.1.1 Inner Zone Width (pg 6-7, p2):** The Program does not clarify whether additional floodplain buffers preclude the use of Steep Streamside Slope (SSS) prescriptions. Floods inundate floodplains and can focus stream energy at the toe of steep, potentially unstable slopes. Therefore, landslides that occur along floodplain-hillslope margin can deliver sediment to a stream. Please explain how additional buffers and SSS zones relate to one another along floodplain reaches.
- J1-49 **6.2.1.2.3 Conifer Density Requirements (pg 6-8):** The conifer retention standard for Class I streams is inadequate. The prescription does not acknowledge that there is a lack of LWD in mainstem channels, such as Redwood Creek and its large tributaries, nor the lack of large, recruitable conifers in the riparian zones. As written, high grading of the largest conifers could continue, and Class I riparian corridors could be reduced to 16-inch dbh conifers, where they exist. The proposed retention requirement appears to be less restrictive than current FPRs that retain a greater number of conifers per acre and larger trees. Given current riparian conditions in Redwood Creek, we believe no harvest should occur from the inner zones of Class I and Class II-2 streams for the life of the Plan. Alternatively, thinning from below could be used to encourage conifer establishment and growth where lacking in riparian zones. These recommendations should also be applied to the lower 1000 feet of Class II-2 streams that are tributary to or join Class I streams. Please justify the biological and physical basis for the proposed prescription given the above concerns.
- J1-50 **6.2.1.2.5 and 6.2.1.2.6 “Likely to Recruit” and “Unlikely to Recruit” Factors (pg 6-8):** These factors are subject to interpretation and may result in the harvesting of trees that are necessary for the long-term health and function of the riparian zone. A simple and more protective RMZ strategy is to eliminate any harvesting in the RMZs during the 50-year duration of the Plan to allow for the reestablishment of the depleted riparian zones.

zone (0-70 feet) of the RMZ will be a no cut zone; the outer zone (70-150 feet) will retain 85 percent overstory canopy cover; and the additional outer zone due to the presence of the floodplain (150-200 feet) will also receive 85 percent overstory canopy closure. In this particular example, an SMZ area (150-200 feet) that would have otherwise received single tree selection with even spacing of residual conifers plus hardwood retention within this protection zone if no floodplain was present. There would be no additional width added to the SSS. The initial default maximum slope distance for the SSS would already be attained with the additional 50-foot zone to extend beyond the outer edge of the floodplain.

Response to Comment J1-49

See Master Response 18 and the response to Comment G6-13.

Response to Comment J1-50

See Master Response 5 regarding “likelihood to recruit” and Master Response 18 regarding riparian widths.

Response to Comment J1-51

Under AHCP/CCAA Section 6.2.4.2.6, firelines that are not in a RMZ or an EEZ will have drainage structures adequate to prevent the delivery of sediments to RMZs or EEZs.

Fireline construction or reconstruction within a RMZ or EEZ will be with hand tools (AHCP/CCAA Section 6.2.4.2.8). All firelines within RMZs and EEZs will have drainage structures that will minimize the movement of sediments from the exposed fireline surface and are not subject to the ground disturbance standard for seeding and mulching described in AHCP/CCAA Section 6.2.1.

Response to Comment J1-52

The Services believe that downed trees that meet any one of the three criteria listed in Section 6.2.1.2.13 should be left in place. Green Diamond is responsible for implementing all measures in the Operating Conservation Program, including the measures in Section 6.2.1.2.13 on a site-specific basis .

Response to Comment J1-53

See Master Response 18 on the width of Class II buffers.

Response to Comment J1-54

See Master Response 18.

Response to Comment J1-55

Slope steepness will be measured by Green Diamond staff in the field using a hand-held clinometer during field work and the THP preparation process. Measured slope intervals and minimum slope

J1-51

6.2.1.2.9 Management related Ground Disturbance Treatment (pg. 6-9): The Program should specify that firelines would be treated once they are no longer needed, and large areas of bare soil adjacent to or above park land should not result in the introduction of exotic species into the park. The use of native duff or woody material would prevent this. If straw and seed must be used, use only rice straw or certified weed-free straw, and non-persistent seed such as cultivars of cereal grain (e.g., red oats or Briggs barley.)

J1-52

6.2.1.2.13 Outer Zone Salvage (pg 6-9): Guidelines for salvage of downed trees are not protective enough of Class I streams because only one criterion must be met. Criteria #1 should include all wood located 50 feet above and to the side of an unstable, and all wood located within and below an unstable area. Also, who would determine whether the wood meets the criteria listed? Please explain and clarify.

J1-53

6.2.1.3 Class II RMZ Width (pg 6-10): We are unaware of any logical basis that would justify the reduction of Class II RMZ widths to 70 feet because it is a first-order stream. Stream order is a geomorphic expression of a landscape that is controlled by many factors, including aspect, hillslope position, soils, tectonic influence and underlying geology to name a few. To suggest that all first-order streams within the first 1000 feet of origin are the same, oversimplifies geomorphic principles and erosional processes. The current FPRs provide 100-foot, or wider, zones if slope conditions warrant. The T&I Rules clearly establish the beneficial uses of water or anadromous salmonids populations as the priority when establishing zone widths. Table 6-3 (pg 6-68) only shows the percentage of Class II stream channels that would receive one of the two RMZ widths. It does not describe whether the prescribed width would be appropriate. As written, we do not understand how the proposed prescription for Class II RMZ widths can possibly offer the same level of protection as current FPRs. Please justify the reduction of Class II RMZ widths and explain how this offers the same level of protection as current FPRs.

J1-54

6.2.1.3.1 Inner Zone RMZ Width (6-10): Please explain how a 30-foot fixed-width along all Class II streams can protect the beneficial use of water and salmonid species on potentially more than 470,000 acres in watersheds that have been previously harvested and roaded under forest practices which did not share today's concern with protecting and improving water quality and aquatic habitat.

J1-55

6.2.2.1.1 Steep Streamside Slopes: Identification (pg 6-14): This section presents the minimum slope gradients for each HPA Group. However, how slope steepness is measured and over what size of area are not described. The Program should clearly describe the methods or standards for measuring slope steepness.

J1-56

6.2.2.1.2 Steep Streamside Slopes: Initial Maximum Slope Distance (pg 6-14): This section presents the default maximum slope distances for SSS Zones in each HPA Group. For the Korb HPA, the table reports a 200-foot maximum slope distance. We assume the slope distances are derived from landslide measurements analyzed and depicted shown in Figure 6-4 (pg 6-81) and notice inconsistent values. For the Korb HPA in Figure 6-4, 60 percent cumulative sediment delivery results at 250 feet, not 200 feet as reported in this section. Please explain this inconsistency.

length for measurement will be determined by field personnel at what is considered a reasonable and workable resolution based on site-specific conditions.

Response to Comment J1-56

The initial maximum slope distance for SSSs is derived from the data summarized in Table 6.6 and Figures 6-3 and 6-4. A visual best-fit line was approximated in the interval of greatest concern to determine the actual slope distance presented in the Plan. For the Korbel HPA, this lowers the maximum SSS distance (200 feet), which is a small amount compared to where the specific data point crosses the 60 percent threshold (at approximately 220 feet); but for the Klamath HPA, this increases the maximum distance (475 feet), which is a small amount compared to where the data point crosses the 80 percent threshold (approximately 460 feet).

Response to Comment J1-57

The initial default prescriptions for SSS MWPZs are not intended to remain fixed for 50 years. The SSS Delineation study described in AHCP/CCAA Section 6.2.5.3.2 and Appendix D.3.3 provides for data collection in each of the 11 HPAs to determine the appropriate SSS distance for those individual HPAs based on the criteria described in AHCP/CCAA Section 6.3.2.3. The SSS Delineation for all 11 HPAs is scheduled for the first seven years of the Plan. The SSS Assessment (AHCP/CCAA Section 6.2.5.3.3) is another layer of evaluation to determine compliance with the 70 percent effectiveness goal of the SSS conservation measures. The SSS assessment is scheduled to occur 15 years after the implementation of the Plan. If the SSS conservation measures are not at least 70 percent effective, compared to reference clearcut areas, adaptive management measures will be implemented as described in Appendix D.3.3 withstanding the limitations of the AMRA (see AHCP/CCAA Section 6.2.6.3 and Master Response 15).

The RSMZ is a subset of the RMZ and the SSS. AHCP/CCAA Section 6.2.2.1.4. The RSMZ cannot be extended beyond the RMZ, however, where SSS extend beyond RMZs, an SMZ prescription will apply depending on the maximum SSS distance for the given watershed and watercourse class according to the initial default distances for the HPA Groups or for the specific HPA based on the SSS Delineation Study.

This approach to slope stability in SSS areas is probabilistic in nature and based on a watercourse-centered perspective rather than a hillslope-centered perspective. This approach to SSS conservation measures is similar to a Best Management Practices

J1-57 6.2.2.1.2 Steep Streamside Slopes: Initial Maximum Slope Distance (pg 6-14): The generalized initial default prescriptions are not strong enough for a Plan that will guide forest practices on Simpson land for 50 years. The Program describes the Riparian Slope Stability Management Zone (RSMZ) as a subset of the Riparian Management Zone (RMZ). The description suggests that RSMZ widths cannot be extended beyond RMZ widths. The RSMZ inner and outer zone widths of 70 feet and 30 feet for Class I and Class II streams, respectively, would be too narrow under many situations, especially where riparian areas are dominated by hardwoods, depleted by past forest practices or previous landslides. As presented, the prescriptions would not adequately protect the largest features that can be the most erosionally significant. The greatest flaw in the slope stability measures, however, is the apparent limitation (or lack of discussion) for site specific geologic evaluations and prescriptions based on need. Without this understanding, it is really difficult to place the default prescriptions in a context of current forest practices and review requirements. Please explain and justify this generalized approach to site stability prescriptions, and clearly describe in the Program how site specific conditions would be evaluated and treated.

J1-58 6.2.2.1.3 Steep Streamside Slopes: Outer and Inner Zone Distances (pg 6-14): Section 6.2 should clearly state that Qualifying Slope Breaks would be determined by a geologist or hydrologist. Foresters should not be allowed to make this determination. There is an inherent conflict of interest, and they would be working outside of their license authority and expertise, regardless of the amount of informal training.

J1-59 6.2.2.1.9 Prescriptions for RSMZs in All HPAs except Coastal Klamath and Blue Creek (pg 6-15): The 85 percent overstory canopy default prescription for the outer RSMZ Zone does not speak to conifer retention in the zone. As presented, the prescription would allow the continued high-grading of larger conifers from streamside areas where recruitment for large woody debris from landslide processes can occur from more than 100 feet from a main channel. The prescription does not acknowledge the existing cumulative watershed effects that have reduced the number of conifers from recruitment zones and the amount of large woody debris in channels. Also of concern is the reliance on hardwood species for slope stability with Sudden Oak Death present in our region. Please explain and justify why the Program does not contain a default prescription for the outer RSMZ width zone that would provide post-harvest conifer retention.

J1-60 6.2.2.1.7 Default Prescriptions for SMZs (pg 6-15): The single tree selection method is the initial default for the Slope Stability Management Zone (SMZ). In most cases the default prescription would result in 75 square feet basal area conifer retention which we believe is too low. Reliance on hardwood species for slope stability with Sudden Oak Death present in our region is a major concern. As an initial default, we recommend 125 square feet basal area conifer retention for Sites II and III, 100 square feet retention for Site IV and at least 60 percent hardwood retention. Please explain and justify why a higher initial retention standard is not warranted until the MWA is completed and more specific information and data are available for the Plan Area.

J1-61 6.2.2.1.9 Road Construction (pg 6-15): Section 6.3 establishes MWPZs for slope stability and appropriately recognizes that roads can be a major cause of landsliding. However, the Program reserves the ability to construct new roads or reconstruct old roads through MWPZs with no

type approach and was selected in part for its predictability across the landscape. A deterministic approach for individual site specific circumstances was considered incompatible with the needs of the Services and Green Diamond to model the approximate effectiveness and cost of the Plan.

Site specific conditions will be evaluated on a THP-by-THP basis to determine whether or not any given area qualifies for any conservation measures provided by the Plan. To the extent that site-specific conditions qualify for a prescription under the Plan, that prescription or an alternative provided for by the Plan will be applied. However, this Plan measure will not affect the manner in which site-specific conditions are evaluated and addressed under the CFPRs. If, during the State THP review process, additional protection of these sites are deemed necessary under other State or Federal laws or regulations, then those measures will apply.

Response to Comment J1-58

The role of foresters and the practice of geology has been discussed in Master Response 13.

Response to Comment J1-59

Regarding “existing” cumulative effects, see Master Response 1 regarding baseline conditions and Master Response 3 regarding cumulative effects. Regarding reliance on hardwoods for slope stability, if 51 percent or more of the preharvest total tree basal area within any SSS, headwall swale, or Tier B Class III watercourse is lost as a result of sudden oak death or stand treatment to control sudden oak death, on site review will be made by an RG and RPF to develop additional prescriptions to compensate for the loss of hardwood root strength through retention of additional conifers. (See AHCP/CCAA Section 6.2.9.5.)

The Services’ role in designing the conservation program is to “*be prepared to advise*” during the development of the Plan and to judge its consistency with the ESA approval criteria as a whole once the

application is complete (HCP Handbook at 3 6 and 3 7). The ESA does not require that any particular measure be adopted or imposed, but only that its criteria for Permit issuance be met. Issuance criteria are discussed in Master Response 8. Each of the prescriptions in the Operating Conservation Program, including the RSMZ prescriptions, contribute to minimizing and mitigating impacts of taking on the covered species. Therefore, the Services believe that the Plan meets the requirements of ESA Section 10(a).

Response to Comment J1-60

The potential impacts of forest management to slope stability are discussed in AHCP/CCAA Sections 5.3 and 6.3 and in Appendix F1 of the Plan. The goal of the SSS conservation measures is 70 percent effectiveness when compared to reference clearcut area. The effects of the covered activities on landslide-related sediment delivery are estimated based on the discussion presented in Appendix F1 of the Plan and sediment modeling in Appendix F3 of the Plan. Based on the 70 percent effectiveness goal in SSS MWPZs and the discussion and data in Appendices F1 and F3, the Services consider the SSS conservation measures (see AHCP/CCAA Section 6.2.2.1) to be reasonably compatible with the performance goal of this conservation measure. Also, the performance goal of SSS conservation measures was weighed in the context of the other conservation measures and the relative sediment contribution from the various management related sources. The Services and Green Diamond made a reasonable attempt to bias the conservation measures toward the areas where conservation measures would likely have the most effect. As a result, conservation measures for roads (see AHCP/CCAA Section 6.2.3) are emphasized in the Plan and conservation measures for SSS were assigned a slightly lower performance bar, though they remain an important aspect of the overall Operating Conservation Program. Correspondingly, where conservation measures have an even lesser likelihood of having a meaningful effect, such as on large, deep-seated landslides, the measures have a still lower assumed effectiveness standard.

Also see Master Response 16.